

ABSTRACT

[0063] The invention provides an magnetic memory element having improved switching properties and zero field offset, and a manufacturing method thereof. The element comprises a first magnetic layer overlying a conductive layer and a nonmagnetic layer overlying the first magnetic layer. Next, a second magnetic layer is provided over the nonmagnetic layer, wherein the second magnetic layer comprises an antiferromagnetic layer overlying a ferromagnetic free layer to apply a small bias to the ferromagnetic free layer. Then, the first magnetic, nonmagnetic and second magnetic layers are patterned to form the memory element.